

What is claimed is:

1. A circuit for connection to a DC bus for providing power to a traction motor of an non-highway vehicle, said circuit comprising:

a first inverter for connection between the DC bus and the traction motor; and

a second inverter for connection between the DC bus and the traction motor whereby the second inverter is in parallel connection with the first inverter.

2. The circuit of claim 1 further comprising a third inverter for connection between the DC bus and the traction motor whereby the third inverter is in parallel connection with the first and inverters.

3. The vehicle of claim 1 wherein the first inverter and the second inverter are balanced/matched such that the operating parameters of components of the first inverter are substantially the same as the operating parameters of components of the second inverter.

4. The vehicle of claim 1 further comprising a first impedance device between the first inverter and the traction motor and a second impedance device between the second inverter and the traction motor, said first and second impedance devices for balancing the load between the first and second inverters.

5. The vehicle of claim 1 wherein the traction motor operates at and below a predefined power level, wherein the first inverter is a three phase inverter having components which operate at less than the predefined power level, and wherein the second inverter is a three phase inverter  
having components which operate at less than the predefined power level.

6. The vehicle of claim 7 wherein the inventers include switching components and further comprising a

controller operating the switching components of each of the inverters in a timing pattern that takes into account the turn on delay and/or turn off delay of each switching component.

7. A non-highway vehicle comprising:  
an engine;  
a DC power source driven by the engine and providing DC power via a DC bus;  
  
a traction motor;  
a circuit for connection to the DC bus for providing power to the traction motor, said circuit comprising:  
a first inverter for connection between the DC bus and the traction motor; and  
a second inverter for connection between the DC bus and the traction motor whereby the second inverter is in parallel connection with the first inverter; and  
a controller for coordinating operation of the first and second inverters.

8. The circuit of claim 7 further comprising a third inverter for connection between the DC bus and the traction motor whereby the third inverter is in parallel connection with the first and inverters and wherein the controller coordinates the operation of the third inverter with the first and second inverters.

9. The vehicle of claim 7 wherein the first inverter and the second inverter are balanced/matched such that the operating parameters of components of the first inverter ~~are substantially the same as the operating parameters of~~  
components of the second inverter.

10. The vehicle of claim 7 further comprising a first impedance device between the first inverter and the traction motor and a second impedance device between the

second inverter and the traction motor, said first and second impedance devices for balancing the load between the first and second inverters.

11. The vehicle of claim 10 wherein at least part of the impedance devices includes an electrical conductor connecting the traction motor to each phase of the inverter.

12. The vehicle of claim 7 wherein the traction motor operates at and below a predefined power level, wherein the first inverter is a three phase inverter having components which operate at less than the predefined power level, and wherein the second inverter is a three phase inverter having components which operate at less than the predefined power level.

13. The vehicle of claim 12 wherein the first inverter has components which operate at or at less than one half of the predefined power level, and wherein the second inverter has components which operate at or less than one half of the predefined power level.

14. The vehicle of claim 13 wherein the first inverter has components which are rated to operate at or at less than one half of the predefined power level, and wherein the second inverter has components which are rated to operate at or less than one half of the predefined power level.

15. The vehicle of claim 14 wherein the first inverter has components which are not rated to operate at or above one half of the predefined power level, and wherein the ~~second inverter has components which are not rated to~~  
operate at above one half of the predefined power level.

16. The vehicle of claim 14 wherein the first inverter has components which are overloaded and unable to operate for an extended period of time at substantially above one

half of the predefined power level, and wherein the second inverter has components which are overloaded and unable to operate for an extended period of time at substantially above one half of the predefined power level.

17. The vehicle of claim 7 wherein the controller controls the operation of the first inverter and the second inverter such that the operation of the first inverter is coordinated in time with the operation of the second inverter.

18. The vehicle of claim 7 wherein the inverters include switching components and wherein the controller operates the switching components of each of the inverters in a timing pattern that takes into account the turn on delay and/or turn off delay of each switching component.

19. The vehicle of claim 18 wherein the components of the inverters include faster switches which have a shorter turn on delay and/or turn off delay and slower switches which have a longer turn on delay and/or turn off delay and wherein the controller employs a timing pattern which operates a particular slower switch before a particular faster switch when the particular switches are changing state.

20. The vehicle of claim 18 further comprising:

a plurality of current sensors, each for sensing the current of each one of the components,

a plurality of additional sensors, each for sensing voltages and/or temperatures of each one of the components,

a delay generator responsive to the current sensors  
~~and/or the additional sensors for generating a first delay~~  
signal,

a regulator responsive to the current sensor for generating a second delay signal, and

a combiner for combining the first delay signal and the second delay signal into a delay compensation signal indicating a delay for each particular component.

21. The vehicle of claim 20 wherein the current sensors comprise sensors located between the components and the impedance device and the additional sensors are voltage sensors connected to the impedance device.

22. The vehicle of claim 20 wherein the current sensors comprise sensors located between the components and the traction motor and the additional sensors are voltage sensors connected to the impedance device.

23. The vehicle of claim 20 wherein the current sensors comprise sensors located along the connection between the components and the traction motors between the components and the traction motor and the additional sensors are voltage sensors connected to the connection between the components and the traction motors at a location between the components and the current sensors.

24. The vehicle of claim 20 wherein the current sensors comprise sensors located along the connection between the components and the traction motors between the components and the traction motor and the additional sensors are voltage sensors connected to the connection between the components and the traction motors at a location between the current sensors and the traction motor.

25. The vehicle of claim 20 wherein the delay generator is a feedback generator responsive to the delay compensation signal.

---

26. The vehicle of claim 18 further comprising:  
a plurality of current sensors, each for sensing the current of each one of the components,

a plurality of additional sensors, each for sensing voltages and/or temperatures of each one of the components,

a delay generator responsive to the current sensors and/or the additional sensors for generating a first delay signal, and

a regulator responsive to the first delay generator and the current sensor for generating a second delay signal.

27. The vehicle of claim 26 further comprising a combiner for combining the second delay signal and a feedback delay signal into a delay compensation signal indicating a delay for each particular component.

28. The vehicle of claim 26 wherein the current sensors comprise sensors located between the components and the impedance device and the additional sensors are voltage sensors connected to the impedance device.

29. The vehicle of claim 26 wherein the current sensors comprise sensors located between the components and the traction motor and the additional sensors are voltage sensors connected to the impedance device.

30. The vehicle of claim 26 wherein the current sensors comprise sensors located along the connection between the components and the traction motors between the components and the traction motor and the additional sensors are voltage sensors connected to the connection between the components and the traction motors at a location between the components and the current sensors.

31. The vehicle of claim 26 wherein the current ~~sensors comprise sensors located along the connection~~  
between the components and the traction motors between the components and the traction motor and the additional sensors are voltage sensors connected to the connection between the components and the traction motors at a

location between the current sensors and the traction  
motor.